

Bruchköbel, Germany

The ten apartments in the new residential building are equipped with an underfloor heating and a fresh water station each. As heating system an air sourced electric heat pump is used supplemented by a gas-fired condensing boiler.

Key facts

Building

Location	<i>Bruchköbel, GER</i>
Construction	<i>2017</i>
Heat distribution	<i>underfloor heating</i>
Heated area	<i>1,000 m² living</i>
Level of insulation	<i>new building</i>

Heat pump and source

Number of	<i>1</i>
Installed th. power	<i>12 kW (A-7/W35)</i>
Operation mode	<i>bivalent</i>
Heat source	<i>ambient air</i>

Heating system

Heat demand	<i>27 kW</i>
Heating temperature	<i>38 / 35 °C</i>

Domestic hot water

Type of system	<i>fresh water station in each flat</i>
Max. temperature	<i>55 °C</i>
Circulation system	<i>N/A</i>

Other information

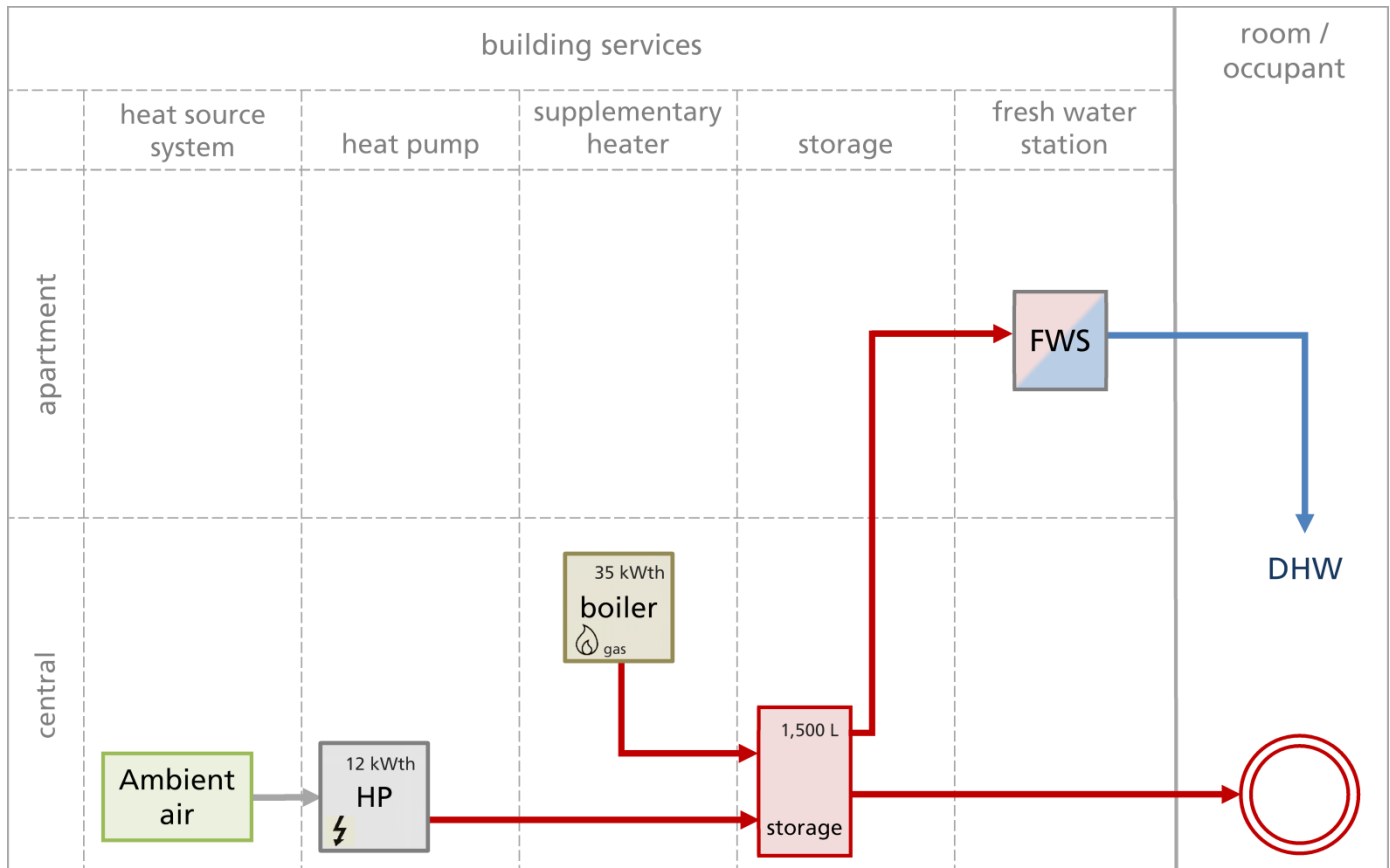
Covering peak load	<i>gas fired condensing boiler (35 kW, nominal)</i>
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Reference: Bosch Thermotechnik GmbH

The new building in Bruchköbel, Germany, contains 10 apartments on a heated living area of 1.000m². The builder-owner is leading his own construction company and he and his team developed the whole design for the technical system. They also supervised the construction personally.

Thanks to the insulation of the building and the installed heating system, the building is fulfilling the German standard "KfW55". That means the construction needs 45% less primary energy compared to a similar new building.

Bruchköbel, Germany, Technical details**Description of the technical concept**

The heating system consists of an air sourced electric heat pump (12 kW @ A-7/W35) and a gas-fired condensing boiler (35 kW). The wall mounted boiler operates in an output range from 10 to 100 % and is used primarily to cover the peak-load.

Both, the heat pump and the boiler are connected to the buffer storage (1,500L): the heat pump at the lower section, the boiler at the upper section.

In each of the ten flats a fresh water station is installed. The supply line, which feeds the fresh water stations, is connected at the very top of the storage. Therefore, the upper part of the storage is heated up to 55°C. The supply line for the heating circuit (floor heating) is connected about one third below the top of the storage. The design temperature of the floor heating is 38°C/30°C. Heating circuit and fresh water stations are using one common return line. Via a valve, the returning water is either feed to the very bottom of the storage or right above the partition plate.



Reference: Bosch Thermotechnik GmbH

The heat pump is installed in the utility room as well and sucks air via an air duct. The supply and return air system is laid in a light shaft.